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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,067	03/19/2004	Naohiro Toda	250758US0	8252
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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER RODEE, CHRISTOPHER D				
ART UNIT		PAPER NUMBER		

1756

DATE MAILED: 06/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/804,067	Applicant(s) TODA ET AL.	
	Examiner Christopher RoDee	Art Unit 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 20-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>various</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election of claims 1-18 and 20-27 in the reply filed on 26 May 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Information Disclosure Statement

All IDS filed 23 May 2006, 10 April 2006, 13 May 2006, 4 October 2005, 19 July 2005, 28 February 2005, 27 December 2005, 14 November 2005, 26 July 2004, and 19 March 2004 have been fully considered except for the citation to 10/184904, which is wholly unrelated to the instant application. Applicants are asked to ensure that this is a proper citation.

Remarks on Claim Interpretation

The definition of "surface roughness" starting on page 15 of the specification has been relied upon for examination of the instant claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-18 and 20-27 are rejected under 35 U.S.C. 102 (a) and/or 102(e) as being anticipated by Toda *et al.* in US Patent Application Publication 2004/0053149.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Toda discloses a photoreceptor including an electroconductive substrate; a charge generation layer located overlying the electroconductive substrate optionally with an intermediate layer therebetween; and a charge transport layer formed overlying the charge generation layer using a non-halogenated solvent and including a charge transport material and a resin. The charge generation layer includes a polyvinyl acetal resin and a charge generation material having an average particle diameter less than a roughness of a surface of either the electroconductive substrate or the intermediate layer, on which the charge generation layer is located (Abstract). Example 1 prepares a charge generation layer from a mixture of a titanyl phthalocyanine pigment and a polyvinyl butyral resin dissolved in MEK. The tradename polyvinyl butyral resin is the resin used in the instant specification on page 52 (i.e., S-LEC BX-1), which is disclosed as having a Mw/Mn ratio of 3.1 and Mn of 120,000 (¶ [0310]). The titanyl phthalocyanine has a specific XRPD pattern giving a maximum peak at 27.2 °, a lowest peak

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angle at 7.3 °, peaks at 9.4 ° and 9.6 °, and no peaks in the range of 7.4 ° to 9.6 ° and no peak at 26.3 ° (Table 1, ¶ [0300]). The charge generation pigment is filtered in the manner of document claim 7 to give the desired size and standard deviation of particle size. The charge transport layer is formed from THF as a solvent and contains a polycarbonate binder resin and a stilbene-amine hole transport compound. As seen in Table 2, the charge generation material has an average particle size of 0.2 µm while the surface roughness of the aluminum drum is 1.0 µm (¶ [0355]).

Example 17 discloses a similar photoreceptor except that the charge transport layer has a polycarbonate charge transport polymer with tertiary amine groups. Protective coating layers are disclosed in Examples 18 and 19. Example 18's protective layer has a polycarbonate binder resin, a particulate alumina compound with a particle diameter of 0.5 µm and a resistivity of $2.5 \times 10^{12} \Omega\text{cm}$. Example 19 discloses a similar layer except that silica with a diameter of 0.3 µm and a resistivity of $4 \times 10^{12} \Omega\text{cm}$ is used.

Example 22 presents an embodiment where the surface protection layer has a polymeric charge transport compound while Example 23 shows anodizing the surface of the conductive support.

The specific apparatus and process cartridge characteristics of the instant claims are presented in document claims 17-23.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Claim Rejections - 35 USC § 102/103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4-6, 8-10, 12, 18, 20-23, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishii *et al.* in US Patent Application Publication 2002/0064721.

Ishii discloses an electrophotographic photoconductor comprising an aluminum drum support having a ten-point surface roughness (Rz) of from 1.2 μm to 3.0 μm (Abstract; ¶ [0032]). A charge generation layer and a charge transport layer are on the support (Abstract) and in some embodiments a surface protection layer is also present (¶¶ [0074] – [0076]). An underlayer is disclosed by the reference example but the disclosure teaches that this layer is optional (¶ [0077]). Example 1 shows a specific photoreceptor having a support with Rz of 1.3 μm . This photoreceptor also has a charge generation layer formed from a gallium phthalocyanine and S-LEC BX-1 polyvinylbutyral resin, which has a Mw/Mn ratio of 3.1 and Mn of 120,000. This layer has a thickness of 0.25 μm . Because the layer has a thickness of 0.25 μm it appears that the diameter of the gallium phthalocyanine particles would be 0.25 μm or less because the particles would not be larger than the layer itself. The average particle diameter of the phthalocyanine in Ishii is less than the surface roughness of the support. A charge transport layer is formed on the charge generation layer. This layer contains a bisphenol-Z polycarbonate resin and a mixture of amine compounds as the hole transport materials. Polycarbonates are disclosed in the specification as a preferred binder resin for the charge transport layer (spec. p. 35, l. 6-8) while amines and stilbene compounds are disclosed as

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preferred charge transport compounds (spec p. 34). Thus the charge transport layer contains specifically disclosed and preferred materials from the specification. In the instant claims, this layer is described in a product-by-process format and states that the charge transport layer is formed from a halogen-free solvent. In Ishii the layer is formed from monochlorobenzene and dichloromethane (Example 1). Because the charge transport layer of Ishii is formed from the specifically disclosed and preferred materials from the specification and has excellent image characteristics, which are also disclosed in the instant specification, it appears that the photoconductor of Ishii identically discloses the same photoconductor as claimed.

The following guidance is relevant to the product-by-process limitation. “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). “The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature” than when a product is claimed in the conventional fashion. *In re Fessmann*, 180 USPQ 324, 326 (CCPA 1974). Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 289, 292 (Fed. Cir. 1983).

Example 13 discloses a similar photoconductor to that of Example 1 except that a titanylphthalocyanine charge generation material was used and the charge generation layer has a thickness of 0.3 μm (Π [0147]). Because the layer has a thickness of 0.3 μm it appears that the

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diameter of the titanyl phthalocyanine particles would be 0.3 μm or less because the particles would not be larger than the layer itself. The average particle diameter of the phthalocyanine in Ishii is less than the surface roughness of the support and appears to have an XRPD as seen in Figure 4.

The photoconductor of the reference is placed in an imaging apparatus provided with a process cartridge having the electrophotographic photosensitive member (Fig. 3). In the Figure reference numeral **21** denotes a drum type electrophotographic photosensitive member of the present invention, which is driven around an axis **22** in the direction of an arrow at a stated peripheral speed. The electrophotographic photosensitive member **21** is, in the course of its rotation, uniformly electrostatically charged on its periphery to a positive or negative, given potential through a primary charging means **23**, which appears from the Figure to contact the photosensitive member. The electrophotographic photosensitive member thus charged is then exposed to exposure light **24** emitted from an exposure means (not shown) for slit exposure or laser beam scanning exposure and intensity-modulated correspondingly to time-sequential digital image signals of the intended image information. In this way, electrostatic latent images corresponding to the intended image information are successively formed on the periphery of the electrophotographic photosensitive member **21**. The electrostatic latent images are subsequently developed by toner by the operation of a developing means **25**. The toner images thus formed and held on the surface of the electrophotographic photosensitive member **21** are then successively transferred by the operation of a transfer means **26**, to a transfer medium **27** fed from a paper feed section (not shown) to the part between the electrophotographic photosensitive member **21** and the transfer means **26** in the manner synchronized with the rotation of the electrophotographic photosensitive member **21**.

Claim Rejections - 35 USC § 103

Claims 1, 2, 4-6, 8-10, 12, 18, 20-23, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii *et al.* in US Patent Application Publication 2002/0064721 in view of Endo *et al.* in US Patent 5,604,063.

Ishii was described above. In the event the reference does not identically disclose the same photoconductor as claimed because of the presence of the non-halogenated solvent in the product-by-process language, Endo teaches that polycarbonate-containing charge transport layers should be designed to use non-halogenated solvents because the resultant charge transport layer has high photoresponsiveness, high quality, and high resolution (cols. 1 & 2; col. 20, l. 28- col. 22, l. 45).

Claims 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii *et al.* in US Patent Application Publication 2002/0064721 in view of Endo *et al.* in US Patent 5,604,063 as applied to claims 1, 2, 4-6, 8-10, 12, 18, 20-23, and 27 above, and further in view of *Handbook of Imaging Materials*, 2nd ed. to Diamond, pp. 145-164.

Ishii and Endo were described above. The references disclose imaging apparatuses but fail to disclose the specific charging components of the instant claims. Diamond discloses the conventional imaging apparatus as having non-contact charging devices. These chargers are located across an air gap as seen in Figures 4.2 & 4.3. Further a superposed AC and DC voltage is conventional in the art (p. 150).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use conventional charging devices as discussed by Diamond because these devices are shown to be effective to give an effective charge to the surface of the photoreceptor for effective image formation.

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Claims 1, 3-10, and 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Yang *et al.* in US Patent 5,567,559 in view of Takaya *et al.* in US Patent 6,623,899 and further in view of Ishii *et al.* in US Patent Application Publication 2002/0064721.

Yang discloses an electrophotographic photoreceptor comprising an electroconductive substrate, an intermediate layer comprising a polyamide resin, a charge generation layer, and a charge transport layer formed on the charge generation layer using a halogen-free solvent (Examples; col. 5, l. 12-41). The charge generation layer comprises a polyvinyl butyral resin and a fine dispersion of a titanyl phthalocyanine material having a particle size smaller than 0.3 μm . The charge transport layer is obtained by coating the charge generation layer with a coating solution comprising a binder resin, triphenylamine as the charge transport material, and the solvent toluene. The titanyl phthalocyanine exhibits an X-ray diffraction pattern having a maximum peak at a Bragg angle 27.2 ° and no peak at 26.3 ° using Cu K α radiation (Fig. 8). The specifics of the polyvinylbutyral in the charge generation layer are not disclosed. Yang also does not exemplify an intermediate layer having a surface roughness as required in the instant claims.

Takaya teaches the use of an intermediate layer located between the charge generation layer and the electroconductive substrate of photosensitive member. Takaya discloses that the intermediate layer has a layer thickness of at least 0.5 μm and contains aggregated particles of a specific hydrated aluminum oxide (Abstract). Takaya teaches that the intermediate layer preferably has a 10-point surface roughness Rz 0.1 to 1 μm so as to provide improved function of preventing the occurrence of interference fringes sometimes encountered in an electrophotographic apparatus of a digital scheme using coherent light such as laser light as exposure light" (col. 7, l. 1-8). Takaya exemplifies an intermediate layer having a 10-point

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surface roughness Rz of 0.5 μm (col. 10, l. 13-27). Takaya teach that prior art intermediate layers comprising a polyamide resin have an electrical resistance which is liable to change depending on environmental changes, so that it has been difficult to provide an electrophotographic photosensitive member having stable and excellent potential characteristics in all environments ranging from low temperature/low humidity to high temperature/high humidity" (col. 2, l. 14-27). Takaya discloses that photosensitive members comprising its particular intermediate layer solve the above-mentioned problems of the prior art (col. 3, l. 27-30).

As discussed above, Ishii discloses an effective polyvinyl butyral resin for a charge generation layer. The polyvinylbutyral is S-LEC BX-1, which has a Mw/Mn ratio of 3.1 and Mn of 120,000. This product is commercially available and is effective with titanylphthalocyanine charge generation materials.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the intermediate layer of Takaya in the invention of Yang because this intermediate layer is taught by Takaya to overcome deficiencies of polyamide intermediate layers as used by Yang. It would also have been obvious to use the commercially available polyvinyl butyral resin disclosed by Ishii in the invention of Yang as the charge generation layer polyvinyl butyral resin because Yang does not provide specifics of the polyvinyl butyral resin and Ishii discloses a specific resin that is effective with titanyl phthalocyanines in charge generation layers as desired by Yang.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting

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rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-18 and 20-27 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 7-23, 28, and 29 of copending Application No. 10/606750 in view of Ishii *et al.* in US Patent Application Publication 2002/0064721. The copending application claims a photoreceptor that differs from the instant claims only in the characteristics of the polyvinylbutyral resin for the charge generation layer. Ishii discloses a commercially available polyvinyl butyral resin for a charge generation layer. The polyvinylbutyral is S-LEC BX-1, which has a Mw/Mn ratio of 3.1 and Mn of 120,000. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the commercially available polyvinyl butyral in the claims of the copending application as the resin because the artisan would have found it necessary to select a specific polyvinyl butyral resin to practice the invention of the copending claims and Ishii discloses an effective polyvinyl butyral resin for this purpose in the same field of endeavour.

This is a provisional obviousness-type double patenting rejection.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher RoDee whose telephone number is 571-272-1388. The examiner can normally be reached on most weekdays from 6:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

cdr
9 June 2006


CHRISTOPHER RODEE
PRIMARY EXAMINER